Claims

What is claimed is:

1.   A system for analyzing sheet resistivity of a layer on a wafer and for controlling rapid thermal annealing (RTA) of the layer comprising:

one or more RTA components adapted to perform RTA on the layer;

one or more sheet resistivity analyzing components adapted to analyze the sheet resistivity of one or more portions of the layer upon which the RTA components can perform RTA; and

a feedback generator adapted to accept sheet resistivity data from the analyzing component and to produce a feedback information operable to control the one or more RTA components.

2.   The system of claim 1, wherein the layer is a silicide.

3.   The system of claim 2, wherein the silicide is one of $TiSi_2$ and NiSi.

4.   The system of claim 1, wherein the feedback generator is operable to maintain and/or change the heating time for one or more RTA components.

5.   The system of claim 1, wherein the feedback generator is operable to maintain and/or change the heating temperature for one or more RTA components.

6.   The system of claim 1, wherein the feedback generator is operable to maintain and/or change the heating time and the heating temperature for one or more RTA components.

7.   The system of claim 1, further comprising a data store adapted to store a first information associated with monitoring sheet resistivity and controlling RTA.

8.   The system of claim 7, wherein the first information includes at least one of sheet resistivity measurements, the feedback information, RTA time parameters, RTA heat parameters, layer composition, wafer size, wafer composition, wafer supplier, processing stage data, RTA chamber data and sheet resistivity chamber data.

9.   The system of claim 7, further comprising a monitoring application adapted to analyze the feedback information and to examine the first information stored in the data store and to produce reporting information associated with at least one of the RTA components, the sheet resistivity analyzing components, the feedback generator and the data store.

10.   The system of claim 9, wherein the monitoring application is further adapted to schedule maintenance for at least one of the RTA components, the sheet resistivity analyzing components, the feedback generator and the data store.

11.   The system of claim 1, wherein the one or more RTA components and the one or more sheet resistivity components are located in the same physical apparatus.

12.   The system of claim 11, wherein the feedback generator is operable to maintain and/or change the heating time for one or more RTA components.

13.   The system of claim 1, wherein the feedback generator is operable to maintain and/or change the heating temperature for one or more RTA components.

14.   The system of claim 11, wherein the feedback generator is operable to maintain and/or change the heating time and the heating temperature for one or more RTA components.

15.   The system of claim 11, further comprising a data store adapted to store first information associated with monitoring sheet resistivity and controlling RTA.

16.   The system of claim 15, wherein the first information includes at least one of sheet resistivity measurements, the feedback information, RTA time parameters, RTA heat parameters, layer composition, wafer size, wafer composition, wafer supplier, processing stage data, RTA chamber data and sheet resistivity chamber data.

17.   The system of claim 15, further comprising a monitoring application adapted to analyze the feedback information and to examine the first information stored in the data store and produce reporting information associated with at least one of the RTA components, the sheet resistivity analyzing components, the feedback generator and the data store.

18.   The system of claim 17, wherein the monitoring application is further adapted to schedule maintenance for at least one of the RTA components, the sheet resistivity analyzing components, the feedback generator and the data store.

19.   The system of claim 1, wherein the wafer is mapped into a plurality of grid blocks, and where the one or more sheet resistivity analysis components are further adapted to make a determination of sheet resistivity at a grid block and where the one or more RTA components are further adapted to be selectively controllable for performing RTA at a grid block.

20.   A method for regulating layer formation, comprising:

defining a layer as one or more portions;

performing rapid thermal annealing on one or more of the portions;

measuring sheet resistivity in one or more of the portions;

analyzing the sheet resistivity measurements to determine the acceptability of the sheet resistivity at one or more of the portions;

generating feedback information, based at least in part on the sheet resistivity measurements, the feedback information operable to control one or more RTA components, the RTA components corresponding to a respective portion; and

controlling one or more RTA components to regulate RTA at one or more portion.

21.   The method of claim 20, further comprising storing at least one of the sheet resistivity measurements, the feedback information, RTA time parameters, RTA heat parameters, layer composition, wafer size, wafer composition, wafer supplier, processing stage data, RTA chamber data and sheet resistivity chamber data in a data store.

22.   The method of claim 21, further comprising performing machine learning based, at least in part, on data stored in the data store, the machine learning capable of adapting one or more parameters associated with performing RTA on one or more of the portions.

23.   The method of claim 21, further comprising monitoring at least one of the sheet resistivity measurements, the feedback information, RTA time parameters, RTA heat parameters, layer composition, wafer size, wafer composition, wafer supplier, processing stage data, RTA chamber data and sheet resistivity chamber data and producing at least one of a productivity report, an error report and a maintenance schedule.

29

24. A system for regulating layer formation on a silicide wafer, comprising:

sensing means for sensing electrical properties of a layer;

rapid thermal processing means for heating a layer; and

controlling means for selectively controlling the rapid thermal processing means so as to regulate layer formation.

25. A data packet adapted to be transmitted between two or more processes, the data packet containing information related to sheet resistivity measurements.

26. The data packet of claim 25 further containing information related to feedback information operable to control one or more RTA components.